

Application No.: 10/681,471

Docket No.: JCLA11529

REMARKSPresent Status of the Application

The Office Action rejected all presently-pending claims 1-13 and 15-28. Specifically, the Office Action rejected claims 1-3, 5, 7, 8, 10, 12, 13, 15, 16, 18, 20-24, 26 and 28 under 35 U.S.C. 102(e), as being anticipated by Sievenpiper et al. (U.S. 2003/0010529; hereafter Sievenpiper). The Office Action also rejected claims 4, 6, 9, 11, 17, 19, 25 and 27 under 35 U.S.C. 103(a) as being unpatentable over Sievenpiper. Applicants have amended claims 1, 7, 12 and 23 to improve clarity. No new matter is added by the amendment made herein. After entry of the foregoing amendments, claims 1-13 and 15-28 remain pending in the present application, and reconsideration of those claims is respectfully requested.

Discussion of Office Action Rejections

The Office Action rejected claims 1-3, 5, 7, 8, 10, 12, 13, 15, 16, 18, 20-24, 26 and 28 under 35 U.S.C. 102(e), as being anticipated by Sievenpiper et al. (U.S. 2003/0010529; hereafter Sievenpiper) and asserted that Sievenpiper discloses all claimed features of the present invention.

Applicants respectfully traverse the rejections for at least the reasons set forth below.

It is well established that anticipation under 35 U.S.C. 102 requires each and every elements of the rejected claims must be disclosed exactly by a single prior art reference.

The independent claims 1, 12 and 23 are allowable for at least the reason that Sievenpiper fails to teach or disclose each and every features of the proposed independent claims 1, 12 and 23. AS stated above, claims 1, 12 and 23 recite respectively:

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Claim 1. A ground shield structure, suitable for use in an electronic circuit structure, the ground shield structure at least comprising:

a plurality of multi-edge ground cells, periodically, compactly, and complementarily distributed on a ground surface, wherein all the multi-edge ground cells are electrically isolated from each other, and a slot exists between the two adjacent ground cells to reduce an eddy current induced from the electronic circuit structure.

Claim 12. A ground shield structure, suitable for use in an electronic circuit structure, the ground shield structure at least comprising:

a ground surface, comprising a plurality of multi-edge ground cells and at least an interconnection member connecting two of the multi-edge ground cells, wherein the multi-edge ground cells are distributed on the ground surface by a periodic, compact and complementary arrangement, and all the multi-edge ground cells on the ground surface compose of a single-layered ground shield, such that the ground shield structure reduces an eddy current inducted by the electronic circuit structure.

Claim 23. A ground shield structure, suitable for use in an electronic circuit structure which comprises at least one signal transmission device, the ground shield structure at least comprising:

a ground surface, comprising a plurality of multi-edge ground cells distributed on the ground surface by a periodic, compact and complementary arrangement to reduce an eddy current induced from the signal transmission device, wherein all the multi-edge ground cells on the ground surface compose of a single-layered ground shield and all the multi-edge ground cells are electrically isolated from each other.

(Emphasis added). Applicants assert that claims 1, 12 and 23 patently define over the cited art for at least the reason that the cited art fails to disclose at least the features emphasized above.

In the present invention, a plurality of multi-edge ground cells are periodically, compactly and complementarily distributed on a ground surface of the ground shield structure. It should

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be noticed that all the multi-edge ground cells on the ground surface compose of a single-layered ground shield. Furthermore, the multi-edge ground cells are electrically isolated from each other. Therefore, when an inductance coil over the ground shield structure is applied with a current, the inducted eddy current is formed on the ground shield structure. Because of the slots separating the ground cells from each other, the eddy current can be cut off. Further, since the slots according to the present invention are relatively narrow, the electric field on the ground shield structure does not leak to the bottom region of the ground shield structure through the slots so that the ground cells are used as the termination of the electric field (page 6, paragraph[0019]).

However, in the citation, Sievenpiper emphasizes that Hi-Z surface comprises a plurality of elements and each elements is an LC circuit with capacitance determined by the **proximity and overlap area** of the metal plates 10. That is, the metal plates 10 are partially overlapping with each other in order to provide the capacitance therebetween (paragraph [0003]). Sievenpiper, in paragraph [0002], further emphasizes that the array of tiny resonant cavities of the Hi-Z surface are the features of the Hi-Z surface. That is, the resonant cavities alter the effective electromagnetic impedance of the surface so that the impedance of the Hi-Z surface is high enough to support a finite tangential electric field at its surface, **which is not possible with a smooth metal ground plane** (paragraph [0002], lines 10-16). Apparently, in order to increase the impedance of the surface, the flat metal plates 10 used to construct the Hi-Z surface are arranged in two layers and are staggered from each other. That is, the metal plates 10 are partially overlapping with each other (as shown in Fig. 2(f)). Furthermore, as shown in Fig. 2(f) of the cited art, it is clear that the metal plates 10 not only are staggered to each other but also are

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electrically connected to each other through the layer on the bottom surface of the printed circuit board. Obviously, the two layers, which are used to construct the Hi-Z surface and having several metal plates staggered to each other, cannot be separated from each other and should be considered as a whole.

The Office Action asserted that the top metal plates 10 are distributed on the same ground surface. Applicants respectfully disagree with this assertion and would like to attract Examiner's attention to Figs 1 and 2(f) of the cited art. As the same reason mentioned above, the metal plates in the two layers are not arranged in the same plane and are staggered to each other.

Accordingly, Sievenpiper fails to show each and every element of the rejected claims 1, 12 and 23. That is, the metal plates disclosed by Sievenpiper are not arranged at the same plane and should be staggered to each other to achieve the advantages of Hi-Z surface claimed by Sievenpiper. Additionally, the metal plates disclosed by Sievenpiper are not electrically isolated from each other.

In response to the rejection to the claim 7, the Applicants respectfully traverse the rejection but have amended claim 7 to improve the clarity. As amended, claim 7 recites:

Claim 7. A ground shield structure, suitable for use in an electronic circuit structure, the ground shield structure at least comprising:

a ground surface, comprising a plurality of slots in a multi-edge shape, wherein the slots are distributed in the ground surface by a periodic, compact and complementary arrangement **without separating the ground surface into pieces.**

(Emphasis added). Applicants assert that claim 7 patentably defines over the cited art for at least the reason that the cited art fails to disclose at least the features emphasized above.

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In the present invention, the Applicants provide an alternative ground shield structure, wherein a ground surface of the ground shield structure has a plurality of slots with a multi-edge shape. It should be noticed that the slots are distributed in the ground surface by a periodic, compact and complementary arrangement **without actually separating the ground surface into pieces.**

Nevertheless, Sievenpiper fails to teach or suggest that **the metal plates are connected to each other through the surfaces thereof and are partially separated only by the slots.** As shown in paragraph [0002] and paragraph [0003] in the cited art, Sievenpiper emphasizes that the advantage of the Hi-Z surface is obtained by the individual metal plates with the staggered arrangement. As shown in Fig. 1 and Fig. 2(f) in the cited art, it is clear that the metal plates are substantially separately from each other. Apparently, the surface constructed by the metal plates in Sievenpiper's application, which are separated by the slots, is totally against what claimed in claim 7. Accordingly, Sievenpiper fails to show each and every element of the rejected claim 7.

Claims 2-3, 5, 8, 10, 13, 15-16, 18, 20-22, 24, 26 and 28 which depend from claims 1, 7, 12 and 23 respectively, are also patentable over Sievenpiper, at least because of their dependency from an allowable base claim.

For at least the foregoing reasons, Applicants respectfully submit that claims 1-3, 5, 7, 8, 10, 12, 13, 15, 16, 18, 20-24, 26 and 28 patently define over Sievenpiper, and therefore should be allowed. Reconsideration and withdrawal of the above rejections is respectfully requested.

The Office Action also rejected claims 4, 6, 9, 11, 17, 19, 25 and 27 under 35 U.S.C. 103(a) as being unpatentable over Sievenpiper.

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Since claims 4, 6, 9, 11, 17, 19, 25 and 27 is dependent claim which further define the invention recited in claims 1, 7, 12 and 23, Applicants respectfully assert that these claims also are in condition for allowance according to the same reasons as discussed above for the rejection 102. That is, the motivation and the goal of the cited art are totally different from those mentioned in the present invention. Thus, reconsideration and withdrawal of this rejection are respectively requested.

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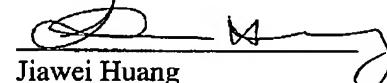
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CONCLUSION

For at least the foregoing reasons, it is believed that the pending claims 1-13 and 15-28 are in proper condition for allowance. If the Examiner believes that a telephone conference would expedite the examination of the above-identified patent application, the Examiner is invited to call the undersigned.

Respectfully submitted,
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